

WE CLAIM:

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5 1. A filter underdrain assembly for
controlling backwash water flow from a backwash water inlet
comprising a plurality of panel members forming a grid like
underdrain, each panel member having a plurality of
apertures, the cross-sectional area of said apertures in
said panel members varying between said panel members, said
apertures of said panel members being located further away
from said backwash water inlet having a lesser cross-
10 sectional area relative to said cross-sectional area of said
apertures of said panel members closer to said backwash
water inlet.

15 2. A filter underdrain assembly as in claim
1 wherein said apertures in said panel members are elongate
slots.

3. A filter underdrain assembly as in claim
2 and further comprising an air passageway in said panel
members.

20 4. A filter underdrain assembly as in claim
3 wherein said panel member has upper and lower surfaces,
said air passageway releasing air below said upper surface
of said panel member.

25 5. A filter underdrain assembly as in claim
3 wherein said air passageway releases air above said upper
surface of said panel member.

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6. A filter underdrain assembly as in claim
3 wherein said air passageway takes the form of a hat
section, said hat section having perforations positioned
below said upper surface of said panel member.

5 7. A filter underdrain assembly as in claim
3 wherein said air passageway takes the form of a hat
section, said air passageway having perforations extending
through said upper surface of said panel member.

10 8. A panel member for controlling backwash
water flow from underdrain blocks of an underdrain filter
assembly, said panel member having a plurality of apertures
therein of predetermined cross-sectional area to allow
passage of water therethrough, an attachment for
mechanically positioning said panel member on said
15 underdrain filter assembly and a sealing member to provide a
substantially watertight seal between said panel member and
said underdrain filter assembly.

20 9. A panel member as in claim 8 and further
comprising an air passageway and perforations in said air
passageway for releasing air under pressure from said air
passageway.

10. A panel member as in claim 9 wherein
said perforations in said air passageway are located below
the upper surface of said panel member.

25 11. A panel member as in claim 9 wherein

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said perforations in said air passageway extend through the upper surface of said panel member.

12. A panel member as in claim 9 wherein said perforations take the form of elongate slots.

5 ~~13.~~ Apparatus for determining backwash water flow distribution through an underdrain assembly comprising a substantially watertight housing for removable attachment to said underdrain assembly, a seal between the lower end of said housing and said underdrain and an indicator to measure the rise and fall of water within said housing responsive to water introduced to said housing from said underdrain.

10 ~~14.~~ Method of measuring backwash water flow through a filter underdrain assembly comprising the steps of removably attaching at least one housing to said underdrain, initiating a backwash cycle and measuring the rate of water flow from said underdrain into said housing.

15 15. Method as in claim 14 wherein said rate of water flow into said housing is measured by the rise of water within said housing.

20 16. Method as in claim 15 wherein said rise of water is measured by a float.

17. Method as in claim 14 wherein said one housing is connected nearer to a water inlet for said underdrain and further comprising a second housing connected

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to said underdrain at a location relatively further from said water inlet for said underdrain.

5 18. Filter underdrain apparatus for
controlling backwash water flow maldistribution from a
backwash water inlet in an underdrain assembly comprising a
plurality of panel elements assembled adjacent each other to
form a grid like underdrain, each panel element having
multiple punched bridges in a surface thereof, each bridge
defining a pair of water inlet/outlet slotted apertures and
10 wherein the number and size of said punched bridges and
slotted apertures respectively can be varied from panel
element to panel element, said panel elements furthest away
from said backwash water inlet having a lesser number of
bridges or smaller slotted apertures from said panel
15 elements nearer to said backwash water inlet, said panel
elements being operable to provide a substantially equalised
water flow through the underdrain assembly from said panel
elements.

20 19. Apparatus according to claim 18 wherein
said multiple punched bridges are sized to substantially
prevent the passage of filter media therethrough.

25 20. Apparatus according to claim 19 and
further comprising an attachment for attaching each of said
panel elements to adjacent panel elements and securing said
panel members to said underdrain.

21. Apparatus according to claim 20 and

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further comprising a seal for forming a substantially watertight seal between a surface of each of said panel elements and said underdrain.

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22. Apparatus according to claim 8 wherein said panel member comprises a generally rectangular open box structure defined by a pair of parallel side walls, a pair of parallel end walls transverse to said side walls and a generally flat surface member communicating with the side and end walls along one edge thereof.

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23. Apparatus according to claim 22 and further comprising a perimeter flange of generally "L" shaped cross-section extending perpendicularly outward from said side and end walls of said panel member, said perimeter flange having a vertical wall, said vertical wall being substantially parallel to the side and end walls of said panel member.

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24. Apparatus according to claim 23 and further comprising a seal attached to said flat surface of said perimeter flange.

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25. Apparatus according to claim 24 wherein said bridges are punched into said surface of said panel member so as to form a convex bridge in said upper surface of said panel member, said convex bridges being arranged in rows and columns.

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Filter underdrain assembly for

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5 controlling backwash water flow from a backwash water inlet comprising a plurality of panel members forming a grid like underdrain, each panel member having a plurality of apertures, the number or cross-sectional area of said apertures varying between said panel members, said panel members located further away from said backwash water inlet having a lesser number or smaller cross-sectional area of said apertures relative to said panel members located closer to said backwash water inlet, said panel members being

10 operable to substantially equalize water flow from each of said panel members of said filter underdrain assembly.

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15 27. Filter underdrain panel member for controlling backwash water flow from underdrain blocks, said panel member having a predetermined number of apertures therein to allow passage of water therethrough, an attachment for mechanically positioning said panel member on said underdrain blocks and a sealing member to provide a substantially watertight seal between said panel member and said underdrain block.

20 28. Filter underdrain assembly comprising an arch extending longitudinally in said underdrain assembly from a water inlet generally located adjacent one end of said arch, said arch being positioned above said underdrain assembly and allowing water from said water inlet to enter

25 the interior of said arch, said arch having a plurality of perforations extending the length of said arch, said plurality of perforations having larger cross-sectional area nearer said water inlet, said plurality of perforations

having smaller cross-sectional area further from said water inlet.

29 Filter underdrain assembly as in claim 28 wherein said perforations are elongate slots, the number of elongate slots at said one end of said arch adjacent said water inlet being greater than the number of said elongate slots adjacent said end opposite said one end.

30. Filter underdrain assembly as in claim 29 wherein said elongate slots are punched in a plurality of plates individually removable from said arch.

31. Filter underdrain assembly as in claim 29 wherein said elongate slots are punched directly into said arch, said slots nearer said water inlet having a greater cross-sectional area than said slots further from said water inlet.

32. Filter underdrain assembly as in claim 31 wherein said elongate slots are generally horizontal.

33. Filter underdrain assembly as in claim 31 wherein said elongate slots are generally vertical.

34. Filter underdrain assembly as in claim 28 and further considering an air passageway in said arch.

35 Method of equalizing backwash water flow
in a filter underdrain assembly having a water inlet and a

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plurality of blocks located relatively closer and relatively further from said water inlet, said plurality of blocks having an upper surface and a water passageway, holes extending between said water passageway and said upper surface, said method comprising blocking a predetermined number of said holes in a specific number of said blocks such that the quantity of water flowing from said upper surface of said blocks located relatively closer to said water inlet is substantially similar to said quantity of water flowing from said blocks located relatively further from said water inlet.

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36. Method as in claim 35 and further comprising positioning panel members over said upper surface of said blocks.

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37. Method as in claim 36 and further comprising apertures in said panel members.

38. Method as in claim 37 wherein said apertures are elongate slots.

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39. Method as in claim 37 wherein the cross-sectional area of all said apertures in each of said panel members is substantially equal.

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